layers which follow one another in a stack and are structured to form at least one capillary area which extends between the first cooling or vaporization area and the second condensation area , and that at least one other metal layer is structured to form a vapor channel structure with are least one vapor channel, such that the at least one vapor channel extends between the first area and second area and has a flow cross section which is larger than a flow cross section of the at least one capillary area.

32. The cooler as claimed in claim 31, wherein there is at least one capillary area on either side of the vapor channel structure.

33. The cooler as claimed in claim 31, further comprising flat top and bottom surface.

34. The cooler as claimed in claim 31, wherein the cooler is formed as a rectangular plate, and the first area and the second area are separated on either side of the cooler by an imaginary center plane (M) which runs perpendicular to a lengthwise extension (L) of the cooler.

35. The cooler as claimed in claim 31, wherein the first area has on at least one surface side of the cooler, at least one electrical component or at least one surface for attaching the at least one electrical component.

36. The cooler as claimed in claim 31, further comprising an auxiliary cooling means on at least the second area.

37. The cooler as claimed in claim 36, wherein the auxiliary cooling means is a cooling element which dissipates heat to ambient air or an ambient medium.

38. The cooler as claimed in claim 36, wherein the auxiliary cooling means is one through which an external coolant flows.

39. The cooler as claimed in claim 31, wherein the plurality of plates are structured such that in an area of these plates a widely branched channel system results, the channel system having continuous, post-like areas between a closed top and bottom.

40. The cooler as claimed in claim 31, wherein the plurality of plates are metal layers which form the capillary structure and metal layers which form the vapor channel structure, are each provided with a plurality of openings and wherein the ratio of a closed area to an open area formed by the openings for the metal layers which form the vapor structure is greater than for the metal layers which form the capillary structure.

41. The cooler as claimed in claim 40, wherein the metal layers which form the capillary structure and the metal layers which form the vapor channel structure are structured similarly, the plurality of openings in the metal layers which form the vapor channel structure having a larger cross section than corresponding plurality of openings in the metal layers which form the capillary structure.

42. The cooler as claimed in claim 40, wherein the metal layers which form the vapor channel structure have more openings than the metal layers which form the capillary structure.

43. The cooler as claimed in claim 31, wherein the plurality of openings in one of the at least two metal layers and the plurality of openings in an adjacent metal layer in the

capillary structure in the vapor channel structure in planes of these layers perpendicular hereto form continually changing flow paths between the first and the second area.

44. The cooler as claimed in claim 31, wherein the plurality of openings of at least one metal layer is surrounded by material crosspieces which are joined to one another or which branch in the manner of a network and which form a ring structure around each opening.

45. The cooler as claimed in claim 44, wherein the material crosspieces form a hexagonal ring structure around each opening.

46. The cooler as claimed in claim 44, wherein the ring structure has at least three corner points which form a triangle.

47. The cooler as claimed in claim 31, wherein the first and second areas form continuous post-like or column-like areas.

48. The Cooler as claimed in claim 46, wherein the continuous post-like or column-like areas are formed by the corner points of the ring structure.

49. The cooler as claimed in claim 31, wherein the at least two metal layers are made identical in at least one capillary structure, but adjacent layers are turned one to another.

50. The cooler as claimed in claim 1, wherein a structured area of the at least one metal layer has angular openings or breaches.

51. The cooler as claimed in claim 31, wherein the other metal layers for at least one vapor channels structure has additional openings or breaches.

52. The cooler as claimed in claim 31, wherein the at least one metal layer which forms the capillary structure in a structured area is provided with a plurality of slotted openings.

53. The cooler as claimed in claim 52, wherein to form the capillary structure, metal layers of a first type in which the slots extend in a first axial direction, and metal layers of a second type are used in which the slots extend in a second axial direction which includes an angle with the first axial direction.

54. The cooler as claimed in claim 53, wherein the angle is 90°.

55. The cooler as claimed in claim 31, wherein the at least the metal layers for the capillary structure on at least one surface side are provided with a plurality of groove-like depressions.

56. The cooler as claimed in claim 31, wherein the at least one capillary structure is formed by at least one channel in which there is a material which supports and/or produces a capillary action.

57. The cooler as claimed in claim 56, wherein the material which supports and/or produces a capillary action is a powder selected from metal oxide, aluminum, copper oxide, aluminum oxide, ceramic or combinations thereof.

58. The cooler as claimed in claim 31, wherein the at least two metal layers are partially made from metal.

59. The cooler as claimed in claim 31, wherein the thickness of the at least two metal layers is approximately 100 - 1000 microns.

60. The cooler as claimed in claim 31, wherein structure widths are in the range between 50 - 1000 microns.

61. The cooler as claimed in claim 31, wherein the at least one capillary structure is formed by at least two metal layers and the at least one vapor channel structure is formed by at least one metal layer.--

REMARKS

Applicant has provided a Substitute Specification, marked-up copy of the original specification, and replacement claims. No new matter has been added to the application.

Respectfully submitted,

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